

REMARKS

Overview of the Office Action

Claims 1, 3, 5, 9, 12, 16 and 18 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,781,596 (“Galli”).

Claims 4, 13-15, 17, and 19 have been rejected under 35 U.S.C. §103(a) as unpatentable over Galli in view of U.S. Patent No. 4,812,421 (“Jung”).

Claims 6-8 and 10-11 have been rejected under 35 U.S.C. §103 as unpatentable over Galli.

Status of the claims

Claims 1 and 12 have been amended.

Claim 2 has been previously canceled.

Claims 4 and 5 have now been canceled.

Claims 1 and 3-19 remain pending.

Information Disclosure Statement

Applicants’ note that the information disclosure statement filed on March 20, 2007 has not been considered by the Examiner. Applicants request that the Examiner consider the March 20, 2007 information disclosure statement and make the cited references of record.

Rejection of claims 1, 3, 5, 9, 12, 16, and 18 under 35 U.S.C. §102(b)

The Office Action states that Galli teaches all of Applicants' recited elements. Applicants' disagree.

Independent claim 1 has been amended to recite a surface-mountable miniature luminescent diode or photodiode that includes a leadframe "formed of a flexible multi-layered sheet comprising: a metal foil comprising a first chip connection region and a second chip connection region, the first contact area of the semiconductor chip being disposed on the first chip connection region and the second contact area of the semiconductor chip being coupled to the second chip connection region; and a plastic film arranged on, and connected to, the metal foil, the plastic film defining a plurality of openings in regions arranged on the first and the second chip connection regions; and wherein the semiconductor chip is mounted in one of the plurality of openings of the plastic film with the first contact area contacting the first chip connection region". Support for the claim amendments can be found in original claims 4 and 5, paragraphs [0009] and [0036], and Fig. 1 of Applicants' specification.

Galli fails to teach or suggest a surface-mountable miniature luminescent diode or photodiode, "wherein the semiconductor chip is mounted in one of the plurality of openings of the plastic film with the first contact area contacting the first chip connection region", as recited in Applicants' independent claim 1.

Galli discloses a carrier for semiconductor chips that includes a flexible transparent, polymeric film as a base, metallic conductor patterns on the film, and metallic bonding pads on the inner ends of the metallic conductor patterns for contact between the patterns and the chip. The film and the metallic bonding pads form a multilayer structure. (see Abstract and claim 1 of Galli).

The Examiner cites col. 2, lines 21-22, col. 6, lines 59-60, col. 8, lines 54-57, and elements 10 and 42 of Galli as teaching Applicants' recited plastic film and metal foil. Applicant notes that Examiner referenced sections refer to the Fig. 6 embodiment and the Fig. 8 embodiment.

Although, the component shown in Fig. 6b of Galli includes a carrier film 10 and a lead frame 42, the carrier film 10 does not have any openings therethrough that provide access to the lead frame 42. According to Galli, conductor patterns 12 are arranged on the carrier film 10 (see col. 4, lines 5-6 of Galli). A semiconductor chip 30 is connected (via terminal pads 31) to the conductor patterns 12 of Galli (see col. 4, lines 55-56 of Galli).

Therefore, according to Galli, the components are arranged in the following order: carrier film 10, then the metal carrier conductors 12, and then the semiconductor chip 30. Consequently, the total thickness of the arrangement of Galli is at least the sum of the thicknesses of the carrier film 10, the metal carrier conductors 12, and the semiconductor chip 30.

Nothing in the cited passages of Galli, or anywhere else in Galli, is it taught or suggested to mount the semiconductor chip on the metal foil in a location where the plastic film includes an opening that provides access to the metal foil.

In contrast to Galli, in Applicants' recited invention, the components are arranged in the following order: the metal foil 12, then the plastic film 14 with openings 34, 36, and then the semiconductor chip 22, which is mounted on the metal foil 12 in an opening 34 of the plastic film 14. That is, both the plastic film and the semiconductor chip of the presently claimed invention are disposed on the same side of the metal foil. Thus, the total thickness of Applicants' recited arrangement is the sum of the thicknesses of the metal foil 12 and the semiconductor chip 30.

It is an object of the invention recited in Applicants' claim 1 to reduce the overall size of the surface-mountable miniature luminescence diode or photo diode (see paragraph [0004] of Applicants' specification). The advantage of Applicants' recited arrangement (i.e., the semiconductor chip 30 contacting the metal foil 12 through an opening of the plastic film 14) is that only the thicknesses of the metal foil and the semiconductor chip contribute to the total thickness of the device. In other words, the plastic film 14 does not contribute to the overall thickness of the device (see Fig. 1 of Applicants' specification). If, on the other hand, the plastic film 14 were disposed below the metal foil, the total thickness of the component would increase by the thickness of the plastic film, as is the case with Galli.

Therefore, Galli clearly fails to disclose, teach or suggest a surface-mountable miniature luminescent diode or photodiode "wherein the semiconductor chip is mounted in one of the plurality of openings of the plastic film with the first contact area contacting the first chip connection region", as recited in Applicants' claim 1.

Claim 12 has been amended to recite limitations similar to claim 1 and is, therefore, deemed to be patentably distinct over Galli for at least those reasons discussed above with respect to independent claim 1.

In view of the foregoing, it is respectfully submitted that Galli fails to teach or suggest the subject matter recited in Applicants' independent claims 1 and 12. Accordingly, claims 1 and 12 are patentable over Galli under 35 U.S.C. §102(b).

Dependent claims

Claims 3, 5, 9, 16, and 18, which depend from independent claims 1 and 12, incorporate all of the limitations of the corresponding independent claim and are, therefore, deemed to be

patentably distinct over Galli for at least those reasons discussed above with respect to independent claims 1 and 12.

Rejection of claims 4, 13-15, 17, and 19 under 35 U.S.C. §103(a)

The Office Action states that the combination of Galli and Jung teaches all of Applicants' recited elements.

As previously discussed, Galli does not teach or suggest the invention recited in Applicants' independent claims 1 and 12.

Because Galli fails to teach or suggest the subject matter recited in independent claims 1 and 12, and because Jung fails to teach or suggest any elements of independent claims 1 and 12 that Galli is missing, the addition of Jung to the reference combination fails to remedy the above-described deficiencies of Galli.

Claims 4, 13-15, 17, and 19, which depend from independent claims 1 and 12, incorporate all of the limitations of the respective independent claim and are, therefore, deemed to be patentably distinct over Galli and Jung for at least those reasons discussed above with respect to independent claims 1 and 12.

Rejection of claim 6-8 and 10-11 under 35 U.S.C. §103(a)

The Office Action states that Galli teaches all of Applicants' recited elements

As previously discussed, Galli fails to teach or suggest the subject matter recited in Applicants' amended independent claim 1.

Claims 6-8 and 10-11, which depend from the independent claim 1, incorporate all of the limitations of independent claim 1 and are therefore deemed to be patentably distinct over Galli for at least those reasons discussed above with respect to independent claim 1.

Conclusion

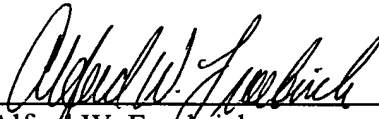
In view of the foregoing, reconsideration and withdrawal of all rejections, and allowance of all pending claims is respectfully solicited.

Should the Examiner have any comments, questions, suggestions, or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

It is believed that no fees or charges are currently due. However, if any fees or charges are required at this time in connection with the application, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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